

CLAIMS

We claim:

1. A powertrain configuration for a truck chassis comprising:
 - 5 a chassis comprising at least two frame rails and at least one intermediate cross member;
 - a forward wheel assembly attached to a forward region of the chassis;
 - a rearward wheel assembly attached to a rearward region of the chassis; and
 - 10 an engine positioned between and attached to two chassis frame rails between the front and rear wheel assemblies, the engine positioned that, at most, only ten percent of an overall engine height extends
 - 15 above a top of the chassis frame rails.
2. The powertrain configuration of claim 1, wherein the powertrain further comprises a transmission attached to the engine; and
- a driveshaft attached to the transmission.
- 20 3. The powertrain configuration of claim 2, wherein the driveshaft is attached to at least one wheel assembly.

4. The powertrain configuration of claim 3, wherein a set of drive wheels comprises the forward wheel assembly.
5. The powertrain configuration of claim 3, wherein a set of drive wheels comprises the rearward wheel assembly.
6. The powertrain configuration of claim 3, wherein the set of drive wheels comprises the forward wheel assembly and the rearward wheel assembly.
- 10 7. A truck comprising:
a chassis frame, comprising
at least two chassis frame rails having a forward region and a rearward region,
at least one intermediate cross member
15 connecting the chassis frame rails,
a forward wheel assembly comprising at least two front wheels, at least one forward axle, and a forward suspension assembly attached to the chassis frame rails,
20 a rearward wheel assembly comprising at least two rearward wheels, at least one rearward axle, and rearward suspension assembly attached to the chassis frame rails; and

- a powertrain comprising an engine, transmission and driveshaft, the driveshaft mounted to at least one wheel assembly, the powertrain positioned between and attached to the chassis frame rails between the front wheel assembly and the rearward wheel assembly and being at a position that an engine top extends no more than 10 percent of an overall engine height above the chassis frame rails.
8. The truck of claim 7, further comprising a cooling system disposed between the chassis frame rails.
9. The truck of claim 8, wherein the cooling system comprises:
- a heat exchanger;
 - a fan;
 - an engine tunnel configured to extend no more than 24 inches (61 cm) in height above the chassis frame rail at its highest point and extending above the chassis frame rails no more than 38 inches (97 cm) in length, the engine tunnel width defined by a dimension separating the chassis frame rails; and
 - a coolant flow path connecting the engine and the heat exchanger.
10. The truck of claim 9, wherein the heat exchanger is disposed at a forward end of the engine tunnel.

11. The truck of claim 9, wherein the heat exchanger is disposed at the rear of the engine tunnel.
12. The truck of claim 9, wherein the fan is a mechanical fan.
- 5 13. The truck of claim 9, wherein the fan is a hydrostatic fan.
14. The truck of claim 8, wherein the cooling system comprises:
a non-vertical heat exchanger; and
10 a fan.
15. The truck of claim 14, wherein the fan is a mechanical fan.
16. The truck of claim 14, wherein the fan is a hydrostatic fan.
- 15 17. The truck of claim 14, wherein the non-vertical heat exchanger is mounted in a horizontal position.
18. The truck of claim 7, wherein the cooling system is mounted outside of the chassis frame rails.
19. The truck of claim 9 further comprising a cab
20 attached to and above a forward region of the chassis frame comprising a cab floor and a cab floor inclined front section, the cab floor inclined front section configured to conform to the dimensions of the engine tunnel.

20. The truck of claim 7, wherein the placement of the powertrain between the chassis frame rails does not raise the vehicle's center of gravity and an engine bottom ground clearance is not lowered to unsafe levels.

5